INL's energy sector is dedicated to energy research, development and demonstration for the U.S. and the world

Background

Of necessity, the United States needs to accelerate its efforts to develop energy resources in North America for North Americans and to set an energy development model for the rest of the world. The stability of the U.S. economy and the status of nation's security are increasingly vulnerable in the face of threats to its energy resources and supplies, due to the nation's growing demand for oil and gas – including the consumption of energy resources that originate in other countries. As a result, the U.S. must implement an energy transition strategy that requires increasing its domestic energy options and reducing its dependence on foreign oil imports. This posture will require the integration of beneficial environmental technologies into the deployment and use of alternate and renewable energy sources and conventional fossil fuel energy systems.

Regional Context

One particular area of North America that is emerging as a promising hub for energy resources in urgent demand is the Western Inland Energy Corridor (WIEC). Over the next several decades, this region, stretching from northern Canada to the southwestern U.S. and to the Pacific coast will be the focus of significant development. This corridor contains world-class fossil energy reserves of coal, oil shale, and oilsands – that are complemented by real and potential renewable energy resources – including wind, hydropower, and bioenergy. The corridor also hosts world class uranium resources necessary for nuclear power generation.

In addition to collaborations formed to bring this energy network to market, alliances for regional energy development between governmental and private utility interests are being strengthened in Alberta, Canada – and some of the U.S.'s states, including Colorado, Idaho, Montana, Nevada and Wyoming. (Refer to the INL Web story titled "Wyoming energy interests connect with Idaho energy developer.)

Developing these energy-rich resources will require the resolution of critical environmental and water resource issues. Intermingled with and further complicating these issues, are the ongoing infrastructure investments being made in the area, including the expansion of electric transmission lines, oil and gas pipelines, and construction of new power plants.

INL's Attractiveness as Epicenter of Energy

INL's location in the heart of this emerging energy corridor provides an excellent opportunity to be recognized in its role as the region's "go-to" powerhouse for energy security. The lab is a multiprogram national laboratory at the epicenter of research discovery and technical capacity for energy development, and is poised to address the

nation's energy needs – given the diversity of its energy security missions, its scientific and engineering capabilities and its geographic location in a resource-rich environment. The lab's Energy Sector business line, managed under its Science and Technology programs has, as one of its enabling objectives, an approach to partner with other regional energy development interests in addressing WEIC energy research and development needs. Working with regional entities, INL and its partners can develop new energy security programs and capabilities that aim to engage the resources of the region, to enhance the economic condition of the entire region, and to bring about contemporary and forward looking technological breakthroughs that will be required to develop and harness this region's energy resources.

There is also growing interest in the region to use nuclear energy generated heat and hydrogen to recover and convert unconventional fossil energy resources into clean liquid fuels. The inclusion of nuclear energy in the region's energy portfolio also provides INL and the U.S. Department of Energy the opportunity to promote the development and integration of nuclear energy as a means to meet critical national fuel production challenges. Given its technical capabilities in both nuclear and fossil energy, INL is well positioned to support the research, development and testing needed to demonstrate this concept.

The reasons for INL's influential position in the growing energy economy are – first of all, its responsibility and mandated mission from the U.S. government to "ensure the nation's energy security with safe, competitive, and sustainable energy systems." Second, INL maintains strong scientific and technical engineering capabilities in nuclear, fossil and renewable energy development, including the creation of synthetic carbon fuels and cellulosic ethanol through bioenergy refining; subsurface science characterization; water and environmental management and monitoring; and advanced vehicle and battery energy storage testing. INL also conducts critical "distinctive scientific signature" research, including computational energy modeling – a core capability that will be leveraged for and applied to regional energy development. When aligned and integrated, these capabilities will result in a unique and superior capability for the Lab to successfully complete its strategic missions. Third, INL has already established regional credibility over the years, with key energy institutions associated with each emerging facet of this growing and expanding energy corridor.